of branches, the *alpha* type and the *beta* type, are noted. The former are more vigorous, and the latter slender and with a lacunar cortex. The author connects these types with one another as part of the same individual, regarding the slender ramifications as possibly adapted to aquatic conditions. The organization of the vascular tissues is protostelic, characterized as exhibiting a central còre of small, entirely tracheary tissue surrounded by an envelope of larger elements of the xylem. The author calls attention to the support furnished by *Rachiopteris* for the hypothesis put forward by BOWER, POTONIÉ, and others, for the branchlike origin of the leaf in ferns and their allies.—E. C. JEFFREY.

The grass embryo.—SARGANT and ARBER,[37] studying seedlings, and embryos of grasses at the dormant stage, find many variants within the family, which can be satisfactorily accounted for by deriving them from a hypothetical form. This imaginary form they designate as *X*, and the relationships of the various embryos and seedlings are worked out with much ingenuity. The reviewer believes that the problem of the actual relations of monocotyledons to each other and also to the dicotyledons will not be solved by erecting a hypothetical form, but that real progress can be made by a critical study of the earlier stages of the embryo, extending from the fertilized egg to the dormant stage of the embryo. A study of the literature of the subject shows how little is actually known of early embryogeny in angiosperms.—W. J. G. LAND.

Medullary phloem.—A recent paper by WORSDELL[38] is of considerable interest because it involves the deliberate application of general anatomical principles derived from the study of the gymnosperms, living and extinct, to the elucidation of the anatomical structure of the dicotyledons. Its author, as a result of a sojourn in South Africa, became possessed with a large amount of material of the Cucurbitaceae, a group well developed in this geographic region. He finds good reason for concluding from the study of the conservative peduncular and petiolar regions that internal phloem, a feature of the family, is not a primitive characteristic, but results from the fusion of inverted medullary strands with the inner surface of a normal cycle of bundles. Further studies from the same quarter will be awaited with interest.—E. C. JEFFREY.

Potamogeton.—While the economic aspect of the growth of various species of *Potamogeton* in ponds has been the prime object of investigation, Miss MOORE[39] has presented valuable data upon the habits of growth and reproduc-

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[37] SARGANT, ETHEL, and ARBER, AGNES, The comparative morphology of the embryo and seedling in the Gramineae. Ann. Botany **29**:161–222. *figs. 35. pls. 9, 10.* 1915.

[38] WORSDELL, W. C., The origin and meaning of medullary (intraxylary) phloem in the stems of dicotyledons. I. Cucurbitaceae. Ann. Botany **29**:567–590. *figs. 10.* 1915.

[39] MOORE, EMMELINE, The Potamogetons in relation to pond culture. Bull. Bur. Fisheries **33**:255–291. *pls. 22–39.* 1915.

tion in these plants. Emphasis is laid upon the propagation by tubers, tuberous rootstocks, winter buds, burs, and by fragments of stems. The economic aspect of the genus is inseparable from the ecology of the pond, for it deals principally with the food supply afforded a large number of animals, ranging from the larvae of Diptera to canvasback ducks. The paper is made more valuable by its numerous plates and by an extensive bibliography.—GEO. D. FULLER.

Marine algae in fresh water.—Experimenting with several species of marine algae, Miss BROWN[40] found that many soon died and disintegrated if placed in fresh water, or even in sea water with a larger admixture of fresh water. Other species, and notably *Enteromorpha intestinalis*, not only endured almost pure fresh water for a period of about 4 weeks, but also seemed to grow more rapidly in waters fresher than those of the sea. The factors involved in this tolerance were not further analyzed.—GEO. D. FULLER.

Thelephoraceae.—In continuing his studies of the Thelephoraceae of North America, BURT[41] presents *Exobasidium*, *Tremellodendron*, *Eichleriella*, and *Sebacina*, with a full historical discussion, synonymy, and citation of stations. The data in reference to the species are as follows: *Exobasidium*, 3 species; *Tremellodendron*, 7 species (2 new species and 3 new combinations); *Eichleriella*, 5 species (2 new species and 3 new combinations); *Sebacina*, 14 species (7 new species and 4 new combinations).—J. M. C.

Species of Carex.—MACKENZIE,[42] in continuing his studies of *Carex*, discusses *C. straminea* and some of its nearest allies, and also describes 8 miscellaneous new species, chiefly western, as follows: *C. festivella*, *C. Egglestonii*, *C. Lunelliana*, *C. bulbostylis*, *C. onustra*, *C. Sheldonii*, *C. exserta*, and *C. rugosperma*.—J. M. C.

Polyporaceae.—OVERHOLTS[43] has investigated certain critical forms of Polyporaceae, discussing characters and technique, and presents his conclusions in definitions of the 22 species considered.—J. M. C.

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40 BROWN, LOLA B., Experiments with marine algae in fresh water. Puget Sound Marine Sta. Publ. 1:31–34. 1915.

41 BURT, EDWARD ANGUS, The Thelephoraceae of North America. IV and V. Ann. Mo. Bot. Gard. 2:627–658. *pl. 21;* 731–770. *pls. 26, 27.* 1915.

42 MACKENZIE, K. K., Notes on *Carex*. IX. Bull. Torr. Bot. Club 42:603–621. 1915.

43 OVERHOLTS, L. O., Comparative studies in the Polyporaceae. Ann. Mo. Bot. Gard. 2:667–730. *pls. 23–25.* 1915.